



<110> Bristol-Myers Squibb Company  
Chiang, Shu-Jen  
Jonathan, Basch

<120> DIRECT PRODUCTION OF DESACETYLCEPHALOSPORIN C

<130> ON0163

<140> 09/801,852

<141> 2001-03-08

<150> 60/188,033

<151> 2000-03-09

<160> 15

<170> PatentIn version 3.0

<210> 1

<211> 1716

<212> DNA

<213> Rhodosporidium toruloides

<400> 1

atgctcctta acctcttcac cctcgctcc ctcgctgga cgctccagct cgcctttgcc	60
tctccgacct cctcgtccg ccgcacgaac ccaaacgagc cccctccgt cgtcgacctc	120
ggctacgccc gctaccaagg ctacttgaac gagaccgccc gactctactg gtggcgcgga	180
atccgctacg cctcggctca gcgcttccag gctoctcaga cgcccgcgac gcacaaggcc	240
gtccgcaacg cgactgagta tggaccgate tgttgccgg ctagcgaggg aaccaacacg	300
accaagggct tgccgcccgc tagcaacagc tcgagcagcg cgccgcagaa acaggcgctg	360
gaggattgcc tcttctcaa tgtcgttgcc ccgcgggct cgtgcgaggg cgacaatctt	420
ccgctcctcg tctacattca cggaggtggc tacgccttcg gcgatgcgag caccggcagc	480
gactttgccg ccttcaccaa gcacacggga accaagatgg tcgttgtaaa tctccagtac	540
cgtctcggca gctttggttt cctcgttggc caagccatga aggactacgg tgtaacgaac	600
gccggcttgc ttgaccagca attcgccctt caatgggttc aacagcacgt ctcgaagttc	660
ggcggcaacc ccgatcacgt tacgatttgg ggcgagtctg caggcgaggg gtccgttatg	720
aaccagatca ttgcgaacgg cggcaacacc gtcaaggctc tcggtctcaa gaagcccctc	780
ttccacgctg ccacggctc ctccgtcttc ctcccctacc aagccaagta caactcccc	840
ttcgccgagc tgctctactc ccaactcgtc tcggcgacaa actgcaccaa agccgcctcg	900
tccttcgctt gcctcgaagc tgtcgacgct gggcgctcg ctgcggcggg cgtgaagaac	960





Ile Ser Asp Ala Pro Ser Lys Gly Asn Thr Phe Ser Arg Ile Ser Ala  
 420 425 430  
 Val Ile Ala Asp Ser Thr Phe Val Cys Pro Thr Tyr Trp Thr Ala Glu  
 435 440 445  
 Ala Phe Gly Ser Ser Ala His Lys Gly Leu Phe Asp Tyr Ala Pro Ala  
 450 455 460  
 His His Ala Thr Asp Asn Ser Tyr Tyr Ile Gly Ser Ile Trp Asn Gly  
 465 470 475 480  
 Lys Lys Ser Val Ser Ser Val Gln Ser Phe Asp Gly Ala Leu Gly Gly  
 485 490 495  
 Phe Ile Glu Thr Phe Asn Pro Asn Asn Asn Ala Ala Asn Lys Thr Ile  
 500 505 510  
 Asn Pro Tyr Trp Pro Thr Phe Asp Ser Gly Lys Gln Leu Leu Phe Asn  
 515 520 525  
 Thr Thr Thr Arg Asp Thr Leu Ser Pro Ala Asp Pro Arg Ile Val Glu  
 530 535 540  
 Thr Ser Ser Leu Thr Asp Phe Gly Thr Ser Gln Lys Thr Lys Cys Asp  
 545 550 555 560  
 Phe Trp Arg Gly Ser Ile Ser Val Asn Ala Gly Leu  
 565 570

<210> 3  
 <211> 2220  
 <212> DNA  
 <213> Rhodosporidium toruloides

<400> 3  
 ggatccaccc gaactctgtc ccgctttctg gctttcttcc ttgctgtcgc cccatcgcc 60  
 ttcccgaact gccgccatgc tccttaacct cttcaccctc gctccctcg ctgcgacgct 120  
 ccagctcgcc ttgacctc cgacctccct cgccgcgcg acgaacccaa acgagccccc 180  
 tcccgtcgtc gacctcggct acgcccgtc ccaaggctac ttgaacgaga ccgccggact 240  
 ctactggtgg cgcggaatcc gctacgcctc ggctcagcgc ttccaggctc ctcagacgcc 300  
 cgcgacgcac aaggccgtcc gcaacgcgac tgagtatgga ccgatctgtt ggccggctag 360  
 cgagggaacc aacacgacca agggcttgcc gccgcctagc aacagctcga gcagcgcgcc 420  
 gcagaaacag gcgtcggagg attgcctctt cctcaatgtc gttgcccccg ccggctcgtg 480  
 cgagggcgac aatcttcccg tcctcgtcta cattcacgga ggtggctacg ccttcggcga 540  
 tgcgagcacc ggcagcgact ttgccgcctt caccaagcac acgggaacca agatggctgt 600  
 tgtaaactct cagtaccgtc tcggcagctt tggtttctc gctggccaag ccatgaagga 660



[illegible]

6

Gly Val Lys Asn Ser Ala Ala Phe Pro Phe Gly Phe Trp Ser Tyr Val  
290 295 300

Pro Val Val Asp Gly Thr Phe Leu Thr Glu Arg Ala Ser Leu Leu Leu  
305 310 315 320

Ala Lys Gly Lys Lys Asn Leu Asn Gly Asn Leu Phe Thr Gly Ile Asn  
325 330 335

Asn Leu Asp Glu Gly Phe Ile Phe Thr Asp Ala Thr Ile Gln Asn Asp  
340 345 350

Thr Ile Ser Asp Gln Ser Gln Arg Val Ser Gln Phe Asp Arg Leu Leu  
355 360 365

Ala Gly Leu Phe Pro Tyr Ile Thr Ser Glu Glu Arg Gln Ala Val Ala  
370 375 380

Lys Gln Tyr Pro Ile Ser Asp Ala Pro Ser Lys Gly Asn Thr Phe Ser  
385 390 395 400

Arg Ile Ser Ala Val Ile Ala Asp Ser Thr Phe Val Cys Pro Thr Tyr  
405 410 415

Trp Thr Ala Glu Ala Phe Gly Ser Ser Ala His Lys Gly Leu Phe Asp  
420 425 430

Tyr Ala Pro Ala His His Ala Thr Asp Asn Ser Tyr Tyr Ile Gly Ser  
435 440 445

Ile Trp Asn Gly Lys Lys Ser Val Ser Ser Val Gln Ser Phe Asp Gly  
450 455 460

Ala Leu Gly Gly Phe Ile Glu Thr Phe Asn Pro Asn Asn Asn Ala Ala  
465 470 475 480

Asn Lys Thr Ile Asn Pro Tyr Trp Pro Thr Phe Asp Ser Gly Lys Gln  
485 490 495

Leu Leu Phe Asn Thr Thr Thr Arg Asp Thr Leu Ser Pro Ala Asp Pro  
500 505 510

Arg Ile Val Glu Thr Ser Ser Leu Thr Asp Phe Gly Thr Ser Gln Lys  
515 520 525

Thr Lys Cys Asp Phe Trp His Gly Ser Ile Ser Val Asn Ala Gly Leu  
530 535 540

<210> 5

<211> 15

<212> PRT

<213> Rhodosporidium toruloides

<400> 5

Thr Asn Pro Asn Glu Pro Pro Pro Val Val Asp Leu Gly Tyr Ala  
 1 5 10 15

<210> 6  
 <211> 24  
 <212> DNA  
 <213> Other nucleic acid

<400> 6  
 gatcaccggttggggccca ctag 24

<210> 7  
 <211> 30  
 <212> DNA  
 <213> Other nucleic acid

<400> 7  
 actcgccgcc atggtcctta acctcttcac 30

<210> 8  
 <211> 30  
 <212> DNA  
 <213> Other nucleic acid

<400> 8  
 gaaagacccc tagagaccg cggttcaccga 30

<210> 9  
 <211> 6  
 <212> PRT  
 <213> Rhodosporidium toruloides

<400> 9

Thr Asn Pro Asn Glu Pro  
 1 5

<210> 10  
 <211> 17  
 <212> PRT  
 <213> Other nucleic acid

<400> 10

Ala Cys Asn Ala Ala Tyr Cys Cys Asn Ala Ala Tyr Gly Ala Arg Cys  
 1 5 10 15

Cys

<210> 11  
 <211> 17  
 <212> PRT  
 <213> Other nucleic acid



<400> 11

Gly Gly Tyr Thr Cys Arg Thr Thr Asn Gly Gly Arg Thr Thr Asn Gly  
1 5 10 15

Thr

<210> 12

<211> 17

<212> PRT

<213> Other Nucleic Acid

<400> 12

Gly Gly Tyr Thr Cys Arg Thr Thr Gly Gly Gly Arg Thr Thr Asn Gly  
1 5 10 15

Thr

<210> 13

<211> 17

<212> PRT

<213> Other nucleic acid

<400> 13

Gly Gly Tyr Thr Cys Arg Thr Thr Ala Gly Gly Arg Thr Thr Asn Gly  
1 5 10 15

Thr

<210> 14

<211> 17

<212> PRT

<213> Other nucleic acid

<400> 14

Gly Gly Tyr Thr Cys Arg Thr Thr Thr Gly Gly Arg Thr Thr Asn Gly  
1 5 10 15

Thr

<210> 15

<211> 17

<212> PRT

<213> Other nucleic acid

<400> 15

Thr

**W** **E** **N** **I** **T** **A** **S** **H** **O** **R** **E** **S** **S** **E** **C** **R** **E** **D** **E** **N** **T** **I** **O** **N**